

**NExBTL™**

## **A 2nd Generation Renewable Diesel**

**NESTE OIL**

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**refining the future**

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# The Leading Provider of Cleaner Traffic Fuels

- Neste aims to be the world leader in renewable diesel
- Neste will invest several billion dollars in biofuels over the next few years

Refining capacity	250,000 bpd
Employees	4,700 (approximate)
Sales	US\$ 16.5 billion (approximate)

- World headquarters in Helsinki, Finland
- US headquarters in Houston, Texas



**1st Generation  
Available Now**

**2nd Generation  
Available Now**

**Future Developments**

In

Vegetable oils \*

Vegetable oils

Animal fats

Biomass

Esterification

Hydrotreating

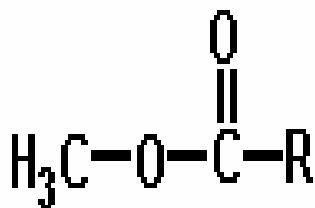
Gasification  
Fischer-Tropsch

**FAME**

**NExBTL™**

**BTL**

Out



# NexBTL™ Renewable Diesel

**A superior quality diesel fuel derived from vegetable oils or animal fats**

- Renewable, pure hydrocarbon fuel
- Superior diesel blending component
- Fits existing infrastructure - no incremental costs
- No storage stability problems
- Excellent performance in cold climates
- Very high cetane number (80...100)
- Free of aromatics, sulfur, oxygen
- Reduces exhaust emissions of NOx, PM, THC, CO
- Low carbon fuel - reduces GHG emissions
- Has excellent life cycle energy balance
- Meets specifications of ASTM D-975
- Can be used in today's diesel engine



# Fuel Property Comparison

	<b>NExBTL™ Renewable Diesel</b>	<b>GTL Synthetic Diesel</b>	<b>FAME RME Esters</b>	<b>S-free Eur. EN590 (summer) Diesel</b>
Viscosity at +40°C (mm²/s)	<b>2.9 ... 3.5</b>	3.2 ... 4.5	≈ 4.5	≈ 3.5
Cetane number	<b>≈ 84 ... 99 *1</b>	≈ 73 ... 81	≈ 51	≈ 53 *2
Cloud point (°C)	<b>≈ - 5 ... - 30 *3</b>	≈ 0 ... - 25	≈ - 5	≈ - 5
Heating value (lower) (MJ/kg)	<b>≈ 44</b>	≈ 43	≈ 38	≈ 43
Heating value (MJ/l)	<b>≈ 34</b>	≈ 34	≈ 34	≈ 36
Polyaromatic content (wt-%)	<b>0</b>	0	0	≈ 4
Oxygen content (wt-%)	<b>0</b>	0	≈ 11	0
Sulfur content (mg/kg)	<b>&lt; 10</b>	< 10	< 10	< 10
Carbon / hydrogen	<b>≈ 5.6</b>	≈ 5.6		≈ 6.0

Note \*1: Blending cetane number

Note \*2: ASTM specification > 40

Note \*3: Product can be engineered to specific cloud point within this range by adjusting process conditions

June 2007

Neste Oil



# Significant reduction in tailpipe emissions

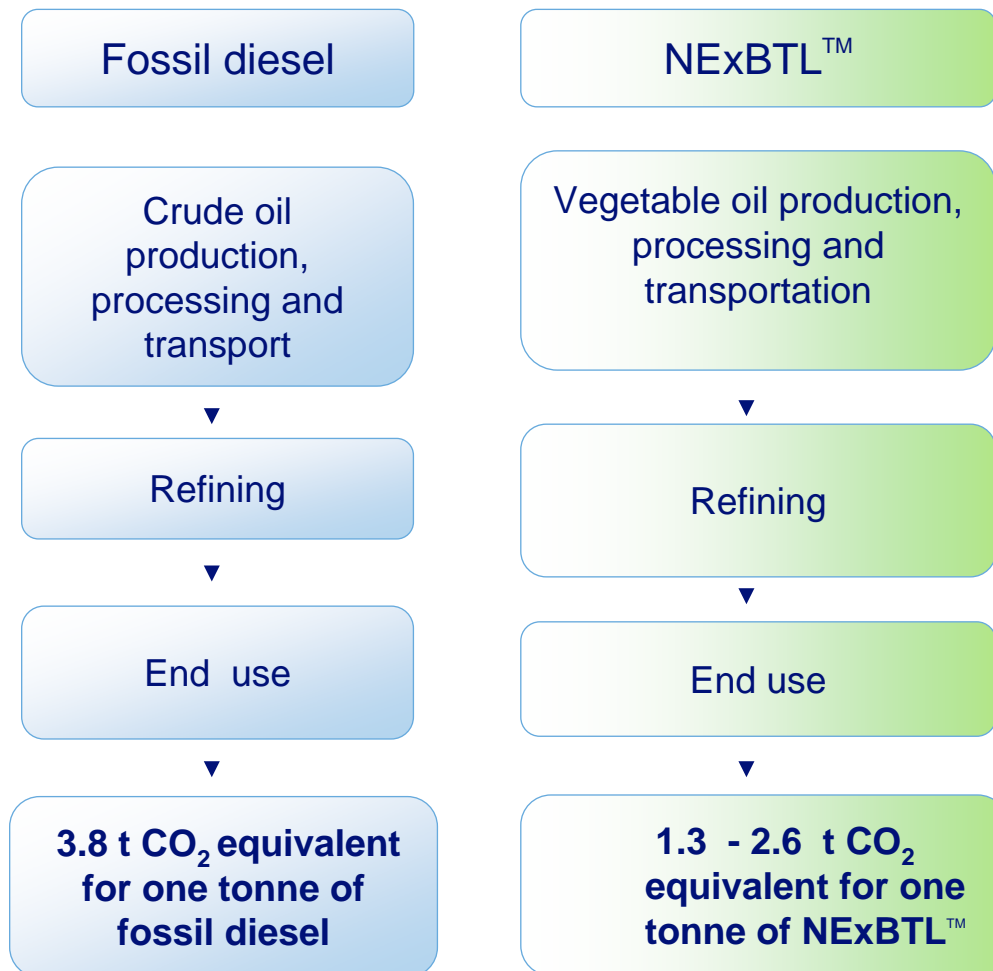
- Engine tests have proved that NExBTL™ renewable diesel reduces tailpipe emissions significantly compared to fossil diesel fuel:

- ✓ 18% less nitrogen oxides
- ✓ 27% less small particle emissions
- ✓ 20% less hydrocarbons
- ✓ 10% less carbon monoxide
- ✓ 30-40% less formaldehydes
- ✓ 40% less benzene

Source: Scania, MAN, VTT



# NExBTL™ Is A Low Carbon Fuel



The greenhouse gas emission over the entire life cycle of NExBTL™ biodiesel is estimated to be 40-60% less compared to fossil diesel (IFEU)

Greenhouse gas emissions can be further decreased at the raw material production:

- better agricultural practises
- improved handling of waste and effluents





# Sustainability Principles for Biofuels

## Feedstock

- We are familiar with the life cycle and the origin of our feedstocks.
- We select our suppliers carefully with emphasis on the HSE and social performance of the supplier.
- We require our suppliers to share the aim of sustainability in operations, with explicit clauses/terms to this effect in mutual agreements.
- We carry out supplier audits or otherwise screen the performance of the supply chain, and work together with suppliers to improve their performance.

## Processing & Manufacture

- We operate highly efficient production processes, which comply with the requirements of ISO and OHSAS environmental, health and safety, and quality standards.
- We continually improve the safety performance of production.
- We develop our production processes to be able to utilise new raw materials.

## Products

- We develop and market high-quality products that help to reduce harmful emissions without limitations to existing engines.
- We aim to continuously improve the greenhouse gas balance and the energy balance of the whole product chain in order to diminish the impacts on the environment.
- We offer our customers products and our partners technologies that comply with current and future regulations.



# Market Access Through Partnerships

## Product side partnerships

- With national champions
  - Local market information
  - Offtake agreements or joint ventures

## Feedstock partnerships

- With feedstock processors/suppliers
  - Sustainable access to key feedstocks

## Other partnerships

- Strategic partners
- Financial partners



## Investing in Renewable Diesel (1 of 2)

- New NExBTL™ plant at Neste's Porvoo refinery in Finland inaugurated May 31, 2007
- Capacity: 170,000 t/a (~3750 bpd, 56 million gpy)
- Investment valued at approx. €100 million
- Designed to meet growing European demand for biofuels
- A "twin" plant to be built at the Porvoo refinery and will start up in 2008



## Investing in Renewable Diesel (2 of 2)

- In March 2006, Neste signed a MOU with OMV of Austria to plan a NExBTL™ plant at OMV's refinery at Schwechat, Austria.
- Business development team is investigating alternative market entry strategies to bring NExBTL™ technology to North America.
- We will invest billions of dollars over the next several years on new production plants.
- World class plants will be large - upward of 250 million gallons.
- In March 2007, Neste Oil and Stora Enso announced a JV to develop technology for producing next generation biofuel from wood residues



# California

## Very Attractive for Biofuels

- Numerous refineries and extensive fuel infrastructure
- Large diesel consumption
- A leader in clean fuels and low carbon fuels

## Issues for further investigation

- Support for biofuels should encourage all technologies
- Feedstock availability
- Permitting of new facilities



# New Biofuels Joint Venture with Stora Enso

## Phase 1

- Pilot plant at Stora Enso's Varkaus Mill (estimated cost €14 million)
- Develop new gas purification technology
  - other tried and tested technology already exists (Fischer-Tropsch)
- Commission the pilot plant in 2008

## Phase 2

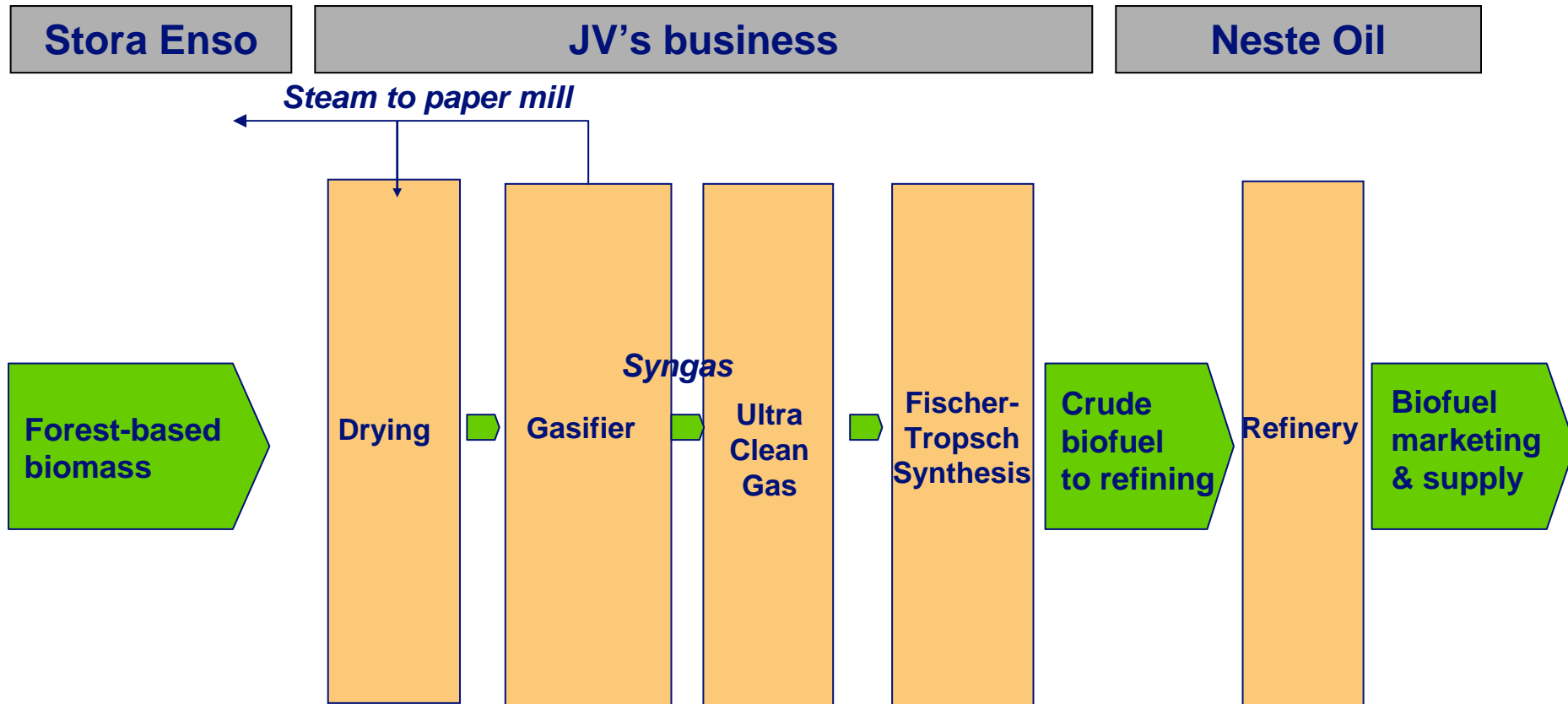
- Build a commercial, full-scale production plant

## Phase 3

- Expand production



# New Biofuels Joint Venture with Stora Enso





***THANK YOU!***



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